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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/716,136	11/18/2003	Jaishankar Moothedath Menon	ARC920030069US1	7019
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JOSEPH P. CURTIN, L.L.C. 1469 N.W. MORGAN LANE PORTLAND, OR 97229-5291			EXAMINER PEIKARI, BEHZAD	
			ART UNIT 2189	PAPER NUMBER
			MAIL DATE 01/10/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/716,136

Applicant(s)

MENON ET AL.

Examiner

B. James Peikari

Art Unit

2189

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) 15-43 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of claims 1-15 in the reply filed on October 19, 2007 is acknowledged. It is noted, however, that applicant has withdrawn claim 15 along with claims 16-43.

Drawings

2. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated.

Figure 2 should be designated by a legend such as --Prior Art-- because it appears that Figure 2 is an exemplary prior art RAID 6 array.

See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, a sample array

according to the invention must be shown or the feature(s) canceled from the claim(s). For example, there should be at least one drawing view showing details of how the sectors of Figure 3 are incorporated into an array, such as that shown in Figure 2.

No new matter should be entered. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

4. The previous objections to the claims are withdrawn to the amendment filed on May 17, 2007.

Claim Rejections - 35 USC § 102

5. The previous rejections under 35 U.S.C. 102 are withdrawn to the amendment filed on May 17, 2007.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Servi et al. (US Patent Application 2004/0107400 A1), hereinafter simply Servi.

Regarding claim 1, Servi teaches a method for protecting data stored in a RAID-configured storage system from uncorrectable media errors, the RAID-configured storage system having a plurality of storage units, the method comprising:

associating n data information sectors (Fig. 1, D 1-10; paragraph 44) with c redundancy information sectors (Fig. 1, P 1-6; paragraphs 45, 46), the c redundancy information sectors being based on the n data information sectors, and n and c being integer value numbers greater than zero; and

writing the n data information sectors with c redundancy information sectors on the same storage unit (paragraph 52, Servi discloses that data and parity set may be stored in different locations on the same storage medium).

Servi did not explicitly mention that the sectors should be "disk sectors" (e.g., RAID parity sectors), it would have been obvious to one having ordinary skill in the art at the time the invention was made to keep the parity data or Servi in dedicated disk sectors (as opposed to "tracks" or "blocks") since (1) sectors were a well recognized disk partition size at the time of the invention and (2) the Servi system utilized disks.

8. Claims 3, 8-9 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Servi et al. (US Patent Application 2004/0107400 A1), hereinafter simply Servi, in view of Kaneda et al. (US Patent 5,958,067), hereinafter simply Kaneda.

(A) Regarding claim 3, Servi teaches a method for protecting data stored in a RAID-configured storage system from uncorrectable media errors, the RAID-configured storage system having a plurality of storage units, the method comprising:

associating n data information sectors (Fig. 1, D 1-10; paragraph 44) with c redundancy information sectors (Fig. 1, P 1-6; paragraphs 45, 46), the c redundancy information sectors being based on the n data information sectors, and n and c being integer value numbers; and

writing the n data information sectors with c redundancy information sectors on the same storage unit (paragraph 52, Servi discloses that data and parity set may be stored in different locations on the same storage medium).

Servi fails to teach the RAID-configured storage system is configured as a RAID 5 storage system. Kaneda teaches a method, wherein the RAID-configured storage system is configured as a RAID 5 storage system (column 1, lines 34-62). At the time of invention it would have been obvious to a person of ordinary skill in the art to combine the Servi with Kaneda. The motivation for doing so would have been an improved response performance and throughput (column 3, lines 51-56).

(B) Regarding claim 8, Keneda teaches a method, wherein the redundancy information is an XOR-based code (column 11, lines 6-23).

(C) Regarding claim 9, Keneda teaches a method, wherein the redundancy information is a one-dimensional parity (column 9, lines 24-33).

(D) Regarding claim 13, Keneda teaches a method, wherein the n data information sectors and the c redundancy information sectors are written consecutively (Fig. 1, Disk 301, Kaneda shows the Data Area 391 and Parity Area 392 are written consecutively).

(E) Regarding claim 14, Keneda teaches a method, wherein the n data information sectors and the c redundancy information sectors are intermingled when written (Fig. 5, Disk 301, Kaneda shows the Data Area 391 and Parity Area 392 are intermingled when written).

9. Claims 2, 4-7 and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Servi et al. (US Patent Application 2004/0107400 A1), hereinafter simply Servi, in view of Hetzler et al. (US Patent Application 2005/0015700), hereinafter simply Hetzler.

(A) Regarding claim 2, Servi teaches a method for protecting data stored in a RAID-configured storage system from uncorrectable media errors, the RAID-configured storage system having a plurality of storage units, the method comprising:

associating n data information sectors (Fig. 1, D 1-10; paragraph 44) with c redundancy information sectors (Fig. 1, P 1-6; paragraphs 45, 46), the c redundancy

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information sectors being based on the n data information sectors, and n and c being integer value numbers; and

writing the n data information sectors with c redundancy information sectors on the same storage unit (paragraph 52, Servi discloses that data and parity set may be stored in different locations on the same storage medium).

Servi fails to teach the RAID-configured storage system is configured as a RAID 6 storage system. Hetzler teaches a method, wherein the RAID-configured storage system is configured as a RAID 6 storage system (Paragraph 34). At the time of invention it would have been obvious to a person of ordinary skill in the art to combine the Servi with Hetzler. The motivation for doing so would have been an improved performance, protection and efficiency (See Hetzler, paragraph 20).

(B) Regarding claim 4, Hetzler et al. teach a method, wherein the RAID-configured storage system is configured as a RAID 51 storage system (paragraph 35).

(C) Regarding claim 5, Hetzler et al. teach a method, wherein the RAID-configured storage system is configured as a RAID 3+3 storage system (paragraphs 27 and 30).

(D) Regarding claim 6, Hetzler et al. teach a method, wherein the RAID-configured storage system is configured as a RAID $N+3$ storage system (paragraph 34).

(E) Regarding claim 7, Hetzler et al. teach a method, wherein the redundancy information is based on a Reed-Solomon code (paragraph 21 and 31).

(F) Regarding claims 10, Hetzler et al. teach a method, wherein the storage unit is a hard disk drive (paragraph 27).

(G) Regarding claim 11, Hetzler et al. teach a method, wherein the storage unit is an optical drive (paragraph 27).

(H) Regarding claim 12, Hetzler et al. teach a method, wherein the storage unit is a random access memory (paragraph 27).

Response to Arguments

10. With regard to applicant's arguments included with the response filed on May 17, 2007, these have been carefully considered by the examiner but are not deemed to place the application in condition for allowance.

(A) With regard to the rejections under 35 USC § 102(e), the arguments are rendered moot in view of the new grounds of rejection.

With regard to applicant's charge of "unsupported allegations", however, applicant's remarks are not commensurate in scope with the language of the claims.

For example, in the case when $c=1$, any RAID system that has any parity in it whatsoever would teach claim 1; in the case where $n=c$, any RAID 5 or RAID 6 system would teach the claim 1; etc.

Applicant has not put any limitation on the scope of "n" and "c", except that they must be integers and must be greater than zero. Add that to the fact that the claims must be given their broadest reasonable interpretation, and then the examiner's statements find clear support.

Also note that, as presently written, the claimed "storage unit" may include in its scope the entire RAID array.

(C) As to the rejections of the dependent claims under 35 USC § 103(a), again it is noted that applicant's technical analyses are very astute and detailed.

However, the logical analyses that follow both the technical discussion of the rejections that rely on Servie and Keneda and the technical discussion of the rejections that rely on Servie and Hetzler contain several allegations of admissions by the examiner which are simply untrue.

In fact, the language that applicant has used in both cases could be used as a boilerplate to argue that any rejection under 35 USC § 103(a) that relies on a combination of references is invalid.

(D) The examiner has carefully reviewed the claims and specification and finds nothing that appears to be new or novel. The examiner consents to applicant's suggestion to have a telephone interview, which may prove very helpful at this point.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Peikari whose telephone number is (571) 272-4185. The examiner is generally available between 7:00 am and 7:30 pm, EST, Monday through Wednesday, and between 5:30 am and 4:00 pm on Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Reginald Bragdon, can be reached at (571) 272-4204. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center at 866-217-9197 (toll-free).



B. James Peikari
Primary Examiner
Art Unit 2189
1/5/07